



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/580,932

05/30/2006

Jianxin Liu

EH-0141

8731

48740 7590 09/16/2008
IP & INTERNET LAW NORTH, LLC
P.O. BOX 38
ZELIENOPLE, PA 16063

EXAMINER

MAI, NGOCLAN THI

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

09/16/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/580,932	Applicant(s) LIU, JIANXIN	
	Examiner NGOCLAN T. MAI	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/4/06</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 6-23, 26-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Storchheim (U.S. Patent No. 3,366,479).

Concerning claim 1, 14 and 21, Storchheim discloses a method for making aluminous product having high ultimate tensile strengths, extremely high crushing strengths and excellent ductility by placing aluminum powder in a suitable die or mold and heating rapidly up to the sintering temperature in the presence of an inert atmosphere having a restricted (but not absence) moisture content for a time sufficient to develop optimum sintered and alloyed properties in the product. See col. 3, lines 7-18. Storchheim discloses inert atmosphere can be nitrogen containing atmosphere and the moisture content of the atmosphere employed during the sintering step should be such that the atmosphere in the environment of the sintered material should have a dew point ranging from -80 °F to -10 °F. See col. 9, lines 5-17 and 27-31. Storchheim discloses during sintering dew points of -44 °F and -58.5 °F in dissociate ammonia were employed. See Examples 5 and 6. While Storchheim does not teach a partial pressure of water vapor, the examiner notes that when converting temperatures of the dew point in these Examples to water vapor using table of conversion, partial pressure of water would be between 0.015 KPa and 0.006 KPa. While Storchheim does not specifically teach the transverse rupture strength of the

Art Unit: 1793

product, the claimed transverse rupture strength would have been inherently possessed by the product of cited reference because the instant claimed method of making and composition are substantially the same as the cited reference. Therefore, the burden is on the applicant to prove that the product of the prior art does not necessarily or inherently possesses characteristics attributed to the claimed product. In re Spade, 911 F.2d 705, 708, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990), In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977) and also see MPEP § 2112.01.

Concerning claims 2, 3 and 22-23, Storchheim teaches the aluminum powder can be a pure aluminum or aluminum alloying with other element when strength properties as well as other attributed of aluminum are desired. See col. 4, lines 14-18.

Concerning claim 6 and 7, Storchheim teaches aluminum powder is mixed with magnesium powder which serves as sintering aid. See col. 9, lines 15-18 and col. 12, lines 63-68.

Concerning claims 8-9, Storchheim teaches aluminum powder can be placed into suitable shaped die or mold in order to impart the desired shape before sintering. See col. 1, lines 38-43 and col. 3, lines 6-10.

Regarding claims 15 and 16, Storchheim in one example discloses an aluminum powder, all of which passed through a 100 mesh (150 microns). See col. 3, Table. Storchheim disclose type D aluminum powder having particle size between 45 microns and 75 microns.

Concerning claims 17-20 and 26-29, Storchheim discloses the desired density can be as low as 60% or less of theoretical density to over 95% of theoretical density. See col. 7, lines 14-16. In particular Storchheim discloses aluminum powder can be pressed to produce porous

Art Unit: 1793

aluminum alloy bearing sintered to have relative density of at least 75% (See Table I high density structure parts having density of about 95% (Examples 4-6).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4, 5, 10 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Storchheim in view of Yeo et al. (US 2003/0170137).

Storchheim differs from the claims in that Storchheim does not teach mixing ceramic powder with aluminum powder recited in claims 4-5 and 24-25 or forming by metal injection molding recited in claim 10.

In the same field of endeavor Yeo teaches aluminum powder can be mixed with silicon carbide in a sufficient amount for required density and strength. Yeo also teaches aluminum powder can be formed into complex-shaped components by injection molding. See abstract. It Therefore, it would have been obvious to combine ceramic powder such as silicon carbide with aluminum powder in the method of making sintered component of Storchheim since adding such powder would have yield product with the required density and strength taught by Yeo. It would also be obvious to substitute the molding step of Storchheim with injection molding in order to form a more complex shaped component as taught by Yeo.

Art Unit: 1793

5. Claims 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Storchheim in view of Myers et al. (Rapid Prototyping of Aluminum by Selective Laser Sintering).

Storchheim differs from the claims in that Storchheim teaches forming by molding but silent about layering manufacturing technique.

In the same field of endeavor Myers et al teaches aluminum powder materials can be used to produce green bodies by selective laser sintering. Myers teaches the green body is formed by adding incremental layers of powder and bonding the appropriate areas with the scanning laser. See abstract.

Since both Storchheim and Myers et al teach method for forming aluminum component, it would have been obvious to one skilled in the art to substitute the one method for the other to achieve a predictable result of forming aluminum powder into shape.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Storchheim in view of Sachs (U.S. Patent No. 6,036,777).

Storchheim differs from the claims in that Storchheim teaches forming by molding but silent about three-dimensional printing (3DP) process.

Sachs teaches aluminum die can be formed by three-dimensional printing (3DP) process. See col. 8, lines 59-65. Since both Storchheim and Sachs teach method for forming aluminum component, it would have been obvious to one skilled in the art to substitute the one method for the other to achieve a predictable result of forming aluminum powder into shape.

Art Unit: 1793

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NGOCLAN T. MAI whose telephone number is (571)272-1246.

The examiner can normally be reached on 8:30-5:00 PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art Unit
1793

n.m.